



## Events & Activities

*Please support the MG conference  
in Flagstaff.*

*Sign-up now! page 6*

*Check out the new MG blog. More garden  
information, events and pictures.*

<http://yavapaigngardener.blogspot.com>

MG Association Meeting, Wednesday,  
Sept. 16 6:30pm, See address page  
for map.

Alta Vista Gardening Club, Prescott, fourth  
Tuesday of the month, 12:30pm. Call 928-  
443-0464 for location and information.

Prescott Area Gourd Society, third Tuesday of  
the month, 6:30 pm, at the Smoki Museum.

Prescott Orchid Society, 3rd Sunday of the  
month, 2pm at the Prescott Library, call Cyn-  
thia for information. (928) 717-0623

Prescott Area Iris Society call 928-445-8132  
for date and place information.

Verde Valley Iris Society call Linda Smith at  
928-567-7470

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University of Arizona Yavapai County Cooperative Extension

# Yavapai Gardens

Master Gardener Newsletter

September 2009

## Cochineal Scale

*Dactylopius coccus*

by Nora Graf



Have you ever seen that white fuzzy stuff on cactus pads? You probably tried to get it off. Did you know that eleven Mayan and Aztec cities conquered Montezuma in the 15th century, sent him yearly tributes of 2000 cotton blankets and 40 bags of cochineal dye? Dye!? Yes,

the cochineal scale is the source of a wonderful red dye. The scale became the second most valuable export from Mexico. First was silver. The dye was so highly prized by Europeans the price was quoted on the London and Amsterdam Commodity Exchanges. In 1777 the French botanist Nicolas-Joseph Thiery de Menonville smuggled the insects and prickly pear pads to the island of Saint Domingue to develop a second source. The British took prickly pear to Australia in 1787 as part of their intent to establish the first British colony at Botany Bay. It didn't work well; the cactus survived—the insects did not. The cactus eventually became a horrible pest in Australia.

The dye was very important to the British. In fact the “red coats” of the British Soldiers that lost the American Revolution depended on cochineal dyes. It wasn't until after the Mexican War of Independence (1810-21) that the Mexican monopoly ended. Guatemala and the Canary Islands added to the flow of commerce. The development of artificial dyes in the mid 1900's, threw the cochineal market into a tailspin, reeking havoc on one of Spain's largest industries.

To see the red coloring, just squish a bit of the white cottony masses on a piece of paper and you will see why Europeans loved its rich color. The process for extracting the dye is to kill the insects by immersing them in hot water and then drying them. Different ways of drying produce different colors ranging from orange to scarlet and other reds. It takes approximately 155,000 insects to produce one kilogram of dye. Cochineal is traditionally used for dyeing fabric and is the most important insect dye used in oriental rugs. Today the dye has experienced a slight resurgence as it is considered a “natural coloring” and is found in foods and cosmetics. It is not toxic or carcinogenic but amongst a very small group of people may cause an allergic reaction. Cochineal dyes are also very stable and do not lose their color over time as much as other dyes.

The white cottony wax protects the female insects and eggs. Eggs hatch into nymphs, sometimes called crawlers. The crawlers feed for about three weeks, moving about the pads before they settle down and start spinning the waxy white fibers. These fibers shelter

# Community Gardening



them from the elements and predators.

Does it hurt your prickly pears? Not really. While it is a sucking insect, the damage is generally insignificant. If the pads have a serious infestation and the plant seems to be suffering, simply remove the worst infected pads. Prune at the joints and dispose of the pad in a bag. You can blast the pads with a spray of water to weaken the insect infestation also. Once you have sprayed with water, a spray of insecticidal soap should get rid of them and minimize the effect on beneficial insects.



Vegetable Garden on the White House lawn? Organic foods? Farmer's Markets?

When did all this become so popular?

It may have been Michael Pollan's article in the New York Times last October inviting the new president (as then un-elected) to show his support of change in the way America does agriculture by starting a vegetable garden on the White House lawn. Michael Pollan wrote the book "Omnivore's Dilemma" which outlined, in details we didn't want to know, where our food comes from.

Or maybe we just wanted to taste a tomato like the ones we used to know. Juicy, sweet and thin-skinned. Whatever the real catalyst, organic farming and community gardens are popular.

The Yavapai Master Gardener Association has responded by offering tutorials to Yavapai gardeners in starting a Community Garden. The Community Gardens Committee and the Speaker's Bureau have teamed up to present a series of presentations on starting and growing a vegetable garden.

These presentations are offered in both Prescott and Verde Valley. Here are the planned presentations:

Community Gardening—August 11th (Prescott), August 25th (Verde Valley).

Garden Soil Preparation—September 8th (Prescott), September 22nd (Verde Valley). Topics are soil testing (pH) and composition, double-digging and sifting, amending, cover crops, vermiculture and composting.

Planning Your Vegetable Garden—October 13th (Prescott) October 27th: (Verde Valley). Topics include location, design, companion planting and crop rotation.

Vegetable Seed Sowing and Planting—November 10th (Prescott), November 24th (Verde Valley). Topics include seed starting and planting calendar, plant selection, seed propagation, planting out, timing (hardening off) and methods and succession planting.

Garden Watering and Irrigation—January 12th (Prescott), January 26th (Verde Valley). Topics include wise watering practices, irrigation systems, gray water and rain harvesting.

Vegetable Garden Maintenance February 9th (Prescott) February 23rd (Verde Valley). Topics include IPM, thinning, pruning, weeding, disease removal, harvesting, propagation and fall clean-up.

# Gardening Research

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Gardening is awash in remedies and solutions that are supposed to fix every problem or produce the finest, the best and tastiest whatever you are growing. Most of the time there is no scientific research behind them that says whether they are truly good or bad. Universities are moving away from traditional horticulture and agriculture research and more into bioscience. While this certainly has a place in the world, it may not be too helpful when planting corn in your back yard. Jeff Gillman works on solving some of questions about these tales. Below is an article he wrote that explains how he decides what to research. I thought it was interesting because it explains why we are still arguing which remedy is best. It also explains what and why he researches what he does. Hopefully it will give you some insight into how research works.

## *How I decide what to research*

*Jeff Gillman of the University of Minnesota.*

That's never an easy question and it's just been getting harder over the years. We work closely with state park boards, private tree care companies, nurseries, master gardeners, and to a somewhat lesser extent the general public to find out what their major concerns are. For example, people want to plant elms but there is concern over Dutch Elm Disease, so my research group and I have spent the last 9 years looking at Dutch Elm Disease-resistant elms here in Minnesota to find out which ones grow best here.

We really don't have to go looking very far for potential research projects. Everyone seems to have questions about something or another. Do hydrogels work? There's a winter of research. Do slugs cross over eggshells? A few weeks in the summer to figure out the best methods for a research test, then a few days of testing. Is it really a good idea to prune my tree's roots before it's planted in the ground? My research group and I have been working on that for about seven years now.

## *Show me the money*

All of this makes it sound as though finding a research project is pretty easy. Well....yes it is. The hard part is funding them. When I began my job as a professor 10 years ago we had a lot of money from the state or federal government. It comes with expectations that the research will be useful and fit well with my teaching duties, but other than that this money is quite flexible. Unfortunately, over the years this funding has decreased, mainly due to the economy, so to keep doing research we have to find grants from sponsors.

Now grants are actually a good idea because they're usually available for subjects people really care about - like elm disease. Unfortunately that also means sometimes taking on projects we're only slightly interested

in to meet salaries. For example, this past year I ran two trials on herbicides for a pesticide company. Not a big deal, but I would rather have spent my time looking at a pet project that I haven't yet found funding for on grafting Japanese maples to improve their cold tolerance. We've been able to find good sponsors for some of our best projects but there are still tons of them we'd dearly love to take on if we could just find the funding.

## *How much money?*

The cost of research projects varies widely, as you'll see from these examples. A project that we recently conducted on the fertility needs of hazelnuts cost us about \$35,000 per year for four years. A good study on techniques for planting a tree would take 3-10 years and average about \$7,000 per year. A study of whether hydrogels actually work cost us about \$1,500. The study on whether slugs will cross eggshells? That was just me having fun. (Check out his website.)

Research expenses are typically space rental (our greenhouse and field space isn't free), buying plants (though often we get a donor, and Bailey's Nursery has been especially good to us), and purchase of scientific equipment, but the biggest expense of all is salaries. My salary is paid for by the government, but everyone who works for me is paid, at least in part, by grants.





It's probably worth noting at this point that of those dollars that some of you have spent on my books, I've donated a significant portion (20 - 30%) back into research at the University of Minnesota. I do the same with much of the money I receive in speaker fees.

If any of you are interested in a research project I would love to hear about it. Then we'll see if your ideas make it over the hurdles listed below.

So, what are my criteria for doing a research project?

1. Is this a worthwhile project that will be helpful to someone (the nursery industry, gardeners, landscapers, the general public, etc.)
2. Can we conduct this project with our expertise?
3. Can we find some way to fund it?
4. Can we do it without funding?
5. Will it be fun? I know that one sounds silly, but it's true. You've got to love what you do. Everyone that I'm associated with here and at other universities loves their job. We love it because we get to do what we've always dreamed of doing: working with plants (and science) for a living! And we'll keep loving it as long as we do projects that keep us and the people we instruct informed and, yes, entertained.

Here is an example of one of the projects he has worked on.

## *Cutting Apart Pot-bound Root Balls when you Plant*

The current state-of-the-art in planting trees and perennials dictates that, if there are any circling roots on a plant that is being transplanted from a container to the ground, you should cut these circling roots. Our research, however, is showing that cutting these roots may be a waste of time. In our research on lindens and willows, cutting these roots actually decreased the number of roots emerging from the root ball. This year we will be harvesting trees of a variety of different species that have been planted with and without root pruning and then grown for four seasons. When we take a look at their root systems we'll have a much better idea about how effective this root pruning is at encouraging new roots.

In the picture on the far left, you can see what some of the rootballs of the trees that we planted looked like. In the picture next to it you can see that, even though the plant was potbound, the leaves came out normally, and all of these trees are doing just fine now.

Besides using normal root cutting techniques such as butterflying and slicing we decided to use some really drastic measures. As you can see in the image on the far left, we actually cut some of the root systems into box shapes. As you can see in the image next to it, that aggressive root pruning really stunted the leaves of some trees -- at least for the first year after planting. All of these trees are doing fine now, too.

*Jeff Gillman and several other "garden professors" have started a blog. Unfortunately, none are from the Southwest but they still have really interesting science-based information. They seem to be just getting it started, so some pages are empty, but give them time and I think it will prove very interesting. You can find it at:*

*<https://sharepoint.cahnrs.wsu.edu/blogs/urbanhort/default.aspx>*

# CSI: Garden Stories

by Arthur Filippino and Angie Mazella



This case is called “The Dying Weeping Willow Tree” and is told by Arthur Filippino, an experienced phone person in the Prescott Office.

It all began when a client left a large picture of a browning weeping willow tree at the Prescott of-

fice, along with samples of the leaves and written details on our Plant Problem Form. Along with the information on the form, the client indicated that a branch had been removed from the tree and that Round-Up had been used recently near the tree. The picture clearly showed that the tree was dying.

In researching the problem, Art came across an article from the University of Colorado citing a case where an individual sprayed Round-Up in a drainage ditch that was six feet from a weeping willow tree. The tree died shortly thereafter.

Art contacted the client and asked what the distance was between the sprayed area and the tree. The response was 6 to 8 feet. Art suggested that the herbicide might be the cause of her dead tree. The client said it was not possible because three arborists had looked at the tree and none of them said the herbicide was the cause. Three opinions? Now a fourth?

It seems the first arborist, who had removed a large branch from the tree in July said that removing the branch was not causing the death of the tree but could not speculate on what the cause could be.

The second arborist was not sure whether the branch removal or the use of herbicide was the problem. He had no answer to what was killing the tree.

The third arborist thought the branch removal was not the problem and the herbicide was the likely cause of the dying tree.

So we now have two opinions that the herbicide was the culprit and none that the branch removal was. Is it time for another opinion? A fifth?

The client was adamant that the herbicide was not the cause. Art suggested that she keep the tree well watered and wait and see what happens in the spring. So what do you do when you probably have the right answer and nobody accepts it? “Wait and see” sounds like the

best solution. No matter the cause, the tree will either die or not. However, Art secretly had another verdict.

As a prosecutor he would indict the client and spouse on a charge of involuntary manslaughter with a recommended sentence of banning herbicides on the property for a period of one year. He would indict the first arborist as an accessory to the crime with a recommended sentence of three months probation (June, July and August) with a prohibition on cutting tree branches during that time.

Well, this is beyond the duties we expect of our phone crew, nor is it within our powers. However, Art thought he made a good detective and prosecutor since for 12 years he walked past Sherlock Holmes’ flat at 221B Baker Street.

What do you think?



**Herbicide damage on a yew.**

## MG Blog

We now have a MG blog. It was designed to be a more timely version of the newsletter and a venue to show more pictures.

I plan on including upcoming activities, what the volunteers in the office are being asked, pictures of our events and your gardens along with other things that might be interesting.

Please send me pictures of your gardens, beautiful plants or make suggestions of items you would like to see included. Also if you hear of a great garden event, send me the details.

I’m also looking for volunteers to maintain it. Email me if you are interested in helping. I’m still working on the inner workings and hope to have an automatic notification system set up soon. Will let you know.

<http://yavapaigardener.blogspot.com>



## *Arizona Highlands Garden Conference* *September 19, 2009* *Garden Tours September 18*

Web Site for registration and all information <http://cals.arizona.edu/coconino/highlandconference.htm>  
Registration materials are available at the Cottonwood and Prescott Extension offices or Contact Beverly Emerson: [bjemerson11@juno.com](mailto:bjemerson11@juno.com) or (928)646-0379

The Arizona Highlands Garden Conference is planned and presented by University of Arizona Cooperative Extension Master Gardener volunteers from Coconino, Yavapai, Gila, and Navajo Counties. The conference offers presentations on a variety of topics related to high elevation gardening and landscaping. This year's theme is 'From the Ground Up' and features two nationally known speakers:

Jeff Lowenfels, author, radio host, and America's longest-running garden columnist  
Brad Lancaster, a dynamic teacher, author and rainwater harvesting expert.

Conference registration is \$65 if received by September 1 and \$80 if received after Sept. 1. To register fill out and mail the registration. Participants may also register for a pre-conference tour of six Flagstaff gardens for an additional fee of \$15.

### PRE-CONFERENCE GARDEN TOURS Friday, September 18, 2009 10am-4pm \$15

Visit six gardens in Flagstaff, one of which has been a Master Gardener project for over six years and features over three dozen roses, a garden with wonderful outdoor living space, an award winning Xeriscape garden, and a local landscaper's garden paradise that features an island, lake with water lilies, extensive perennial beds and much, much more. You will also receive information about several community gardens in Flagstaff. This is a self guided tour with Master Gardeners at each site to answer your questions. Once we receive your registration and additional \$15 fee, we will send you information about the tour and a map to the gardens. You will be on your own to visit each garden between the hours of 10 am and 4 pm. You must pre-register to attend. For more information, call Eleanor at 928-606-4930.

### LODGING

Rooms have been reserved at La Quinta Inn & Suites located less than one mile from the du Bois Conference Center. We have been given a conference rate of \$107 to \$116. You must reserve your room by August 18.

La Quinta Inn & Suites

2015 South Beulah Blvd. Flagstaff, AZ 86001 (928) 556-8666, \$107 - two double beds for up to 4 people, \$116 - king size bed, free Bright Side Breakfast



# MG Calendar

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*Please support the MG conference in Flagstaff.  
Sign-up now!*

## *Iris Sale*

Sept 7 Labor Day, Verde Valley Iris Society Sale, Mount Hope Foods, Cottonwood

September 12th - Mortimer Nursery Autumn Outreach Fair

September 16th Cottonwood "Winter Vegetable Gardening with Extension into Spring Veggie Gardening", Presenter Jay Fleishman

Sept 18 & 19 - Arizona Highlands Garden Conference Flagstaff

Sept 18, Friday Tours and Sept 19, Saturday Conference

September 26th 8 A.M. - Native Plants Identification Hike with Sue Smith. Explore plants on the 2-mile long Willow Dells Trail that winds through Granite Dells near Willow Lake. The trail has a good variety of our native vines, shrubs and trees. Sturdy shoes or boots are recommended since the trail does require some scrambling over rocks. The trail is 2 miles long, but looking at plants is fun so plan on 2+ hours. RSVP to Sue Smith suejs01@yahoo.com or 778-5602.

Sept 30th - Oct 4th – Yavapai County Fair Produce Check In & Judging

October 1st thru 4th - Yavapai County Fair

Oct 10th - Prescott Goldwater Lake "MG Recognition Awards & Picnic"

## *Yavapai County Fair*

We need more volunteers to staff the Extension table on Saturday and to cover the produce area and Extension table in the evenings. Please contact Sherry Howard (howardpena@cableone.net, 445-5647) for the produce area and Bob Burke (bburke@commspeed.net, 301-0394) for the Extension table.

## *Recognition Picnic – Oct 10th, Goldwater Lake, Prescott*

Please contact Kathy MacCauley, prescottgirl@qwest.net, 443-8934, with how many will attend (family members welcome). Also let her know if you will bring a main dish, side dish, or dessert.

FROM THE EDITOR: Please send or email articles and announcements to the address below. All articles must be in my hands by the 10th of the month. Short announcements (no more than 2 or 3 lines) will be accepted until the 25th.

Nora Graf

PO Box 3652

Camp Verde, AZ 86322

mesquite2@hotmail.com

(928) 567-6703



Jeff Schalaus

County Director, Yavapai County Extension Agent,  
Agriculture & Natural Resources  
email: jschalau@ag.arizona.edu

## **Prescott**

**840 Rodeo Dr.**

**Building C**

**Prescott, AZ 86305**

**(928) 445-6590**

**FAX: (928) 445-6593**

## **Cottonwood**

**2657 Village Dr.**

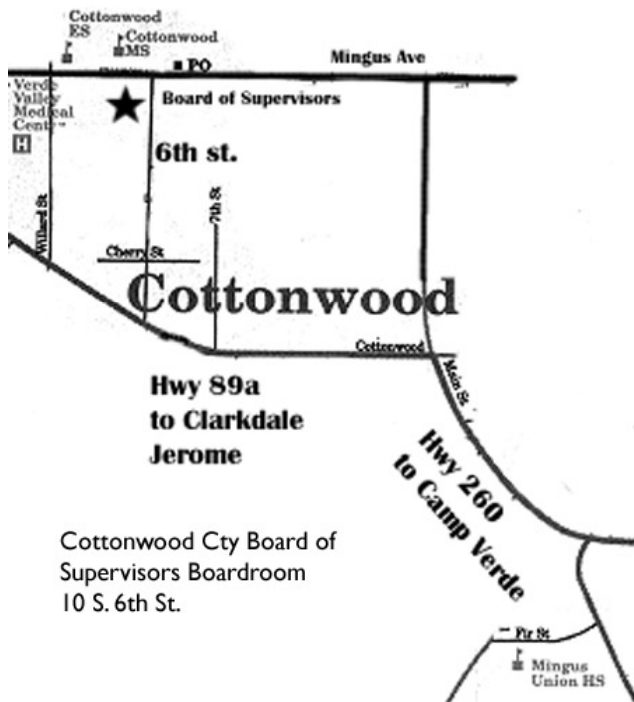
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MG NEWSLETTER



Cottonwood Cty Board of  
Supervisors Boardroom  
10 S. 6th St.

## MG Association Meeting

September 16th Cottonwood "Winter Vegetable Gardening with Extension into Spring Veggie Gardening", Presenter Jay Fleishman